

CLAIMS

1 1. A method for automatically weaning a patient from a ventilator, the
2 method comprising the steps of:

3 (a) providing pressure support to a patient;

4 (b) detecting a spontaneous patient breath;

5 (c) measuring the patient's spontaneous breathing rate;

6 (d) measuring the patient's minute volume;

(e) comparing the patient's spontaneous breathing rate to a predetermined range of breathing rates;

(f) comparing the patient's minute volume to a predetermined tidal volume; and

11 (g) adjusting the patient's support level according to the patient's
12 spontaneous breathing rate compared to the predetermined range of breathing
13 rates, and the patient's minute volume compared to the predetermined minute
14 volume.

1 2. The method for automatically weaning a patient from the ventilator
2 of claim 1, the method further comprising the step of:

(h) decreasing the patient's pressure support level if:

4 (i) the patient's spontaneous breathing rate falls within the
5 predetermined range of breathing rates, and,

(ii) the patient's minute volume exceeds the predetermined minute volume.

1 3. The method for automatically weaning a patient from the ventilator
2 of claim 1, the method further comprising the step of:

3 (h) increasing the patient's support level if:

1 4. The method of claim 1 further comprising adjusting the amount of
2 pressure support between zero and PEEP.

1 5. The method of claim 1 wherein the patient's pressure support level
2 is decreased by a rate between 0.01% and 0.1%.

1 6. The method of claim 1 further comprising setting a low pressure
2 alarm limit.

1 7. The method of claim 1 wherein measuring the patient's
2 spontaneous breath rate further comprises calculating an average breath rate and a
3 current breath rate from patient's spontaneous breath rate to obtain the patient's
4 breath rate.

1 8. A ventilator system for automatically weaning a patient from a
2 ventilator, comprising:

3 a source of pressure in communication with the patient to provide pressure
4 support to the patient;

5 a spontaneous breathing rate monitor;

6 an input device for receiving input values for a predetermined breath rate
7 range and a predetermined minute tidal volume;

8 a minute volume flow meter; and

9 a data processing unit in electrical communication with said pressure
10 source, said breathing rate monitor, said flow meter, and said input device,
11 wherein, said data processing unit calculates an average breath rate and a current
12 breath rate from a signal from said breathing rate monitor to obtain the patient's
13 breath rate, compares the patient's breath rate to the predetermined breath rate
14 range, compares the patient's minute tidal volume to the predetermined minute
15 tidal volume, and adjusts the pressure source to change pressure support in
16 response thereto.

17 9. The ventilator system of claim 8 wherein said source of pressure
18 comprises a pneumatic system comprising a flexible airway, a source of
19 pressurized gas, a rigid chamber, a flexible chamber and a Venturi valve.

1 10. The ventilator system of claim 9 further comprising a high speed
2 pneumatically driven, electronically controlled proportional valve and dual
3 Venturi systems.

1 11. The ventilator system of claim 8 wherein said input device is a
2 touch screen in electrical communication with a display controller processor.

1 12. The ventilator system of claim 8 wherein said data processing unit
2 is a real time data processor in electrical communication with a ventilatory unit
3 processor and an airway processor.

1 13. A method for automatically weaning a patient from a ventilator, the
2 method comprising the steps of:

3 providing pressure support to the patient;

4 determining the patient's spontaneous breathing rate;

5 inputting values for a predetermined patient breath rate range and a
6 predetermined minute volume;

7 measuring the patient minute volume;

8 comparing the patient's breath rate to the predetermined breath rate range;

9 comparing the patient's minute volume to the predetermined minute
10 volume; and

11 adjusting pressure support in response thereto.

1 14. The method of claim 10 further comprising calculating an average
2 breath rate and a current breath rate to obtain the patient's breath rate.